"From this table the following conclusions can be drawn:

"The nearest neighbors of our Solar-system are almost exclusively stars of Type II (like our own sun); as we go further from the sun the number of stars of the first type relatively to the number of those of the second regularly increases, proportionately to the distance (or at least inversely proportional to the proper-motion) until we reach a distance which corresponds to a proper-motion of approximately 0".2.

"With removal to still greater distances the stars of the first type predominate, so that if we include those BRADLEY stars whose proper-motion is so small as to be hardly determinable with accuracy, we shall find about twice as many of the first type as of the second among them.

"The DRAPER Catalogue contains few stars south of Declination —25°. Certain considerations make it very probable, however, that the stars of the southern hemisphere are similarly distributed.

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"Professor KAPTEYN next examined the two following questions:

"1°. Is our Solar-system situated exactly in the centre of the (stellar) system — that is, in that place where the stars of Type II are most numerous?

"2°. What relation does the Milky Way bear to the System?

"Various considerations lead to the general conclusion that the form of our stellar-system may be like that of a sphere surrounded by a ring. Investigations now in progress will throw much light on these questions."

PHOTOGRAPHS OF THE PHENOMENA WHICH ACCOMPANY THE INGRESS OF THE SHADOWS OF THE SATELLITES OF *JUPITER*.

The photographs of *Jupiter* (enlarged direct with the new BRASHEAR amplifier, which magnifies 5 diameters), on October 24th of this year are especially interesting. They cover the time from $7^h\ 27^m$ to $14^h\ 18^m$ (when the sky became hazy), and show the shadows of Satellites I and II on the disc, the *egress* of I from transit, the *ingress* of the shadow of II, etc. The latter phenomenon took place at about $7^h\ 35^m$ P. S. T., by the American Ephemeris. The corresponding negative has nine images on it which were made at the following times:

1	$7^h\ 37^m\ 4^s - 8^s$ P. S. T.	2	$7^h\ 37^m\ 38^s - 41^s$ P. S. T.
3	$38^m\ 8^s - 10^s$ "	4	$38^m\ 44^s - 48^s$ "
5	$39^m\ 15^s - 18^s$ "	6	$39^m\ 48^s - 50^s$ "
7	$40^m\ 24^s - 28^s$ "	8	$7^h\ 40^m\ 51^s - 54^s$ "
9	$7^h\ 41^m\ 21^s - 23^s$ "		

The definition in these images is very sharp. The shadow of II is elongated on all of them, and its longest dimension points nearly in the direction of the shadow of I (which is on the disc). In the first three impressions (1, 2, 3, above), the shadow is markedly longer than it is wide; in the next three, it is about one-and-one-half times as long as wide; in the last three it is nearly twice as long as wide. We have thus succeeded in photographing a phenomenon which was first seen visually here in 1888 (by Messrs. SCHAEBERLE and KEELER, and subsequently by others). The full description of the visual observation is given in these *Publications*, Volume III (1891), page 264, *et seq.* The phenomenon is not easy to explain. That it was a real one was fully shown by the visual observations, and now the photographs can be adduced in confirmation of it. The shadow of I was well on the disc and is round in the photographs, just as shadows in this situation appear to the eye.

E. S. H.

PAPERS ON THE PERSONAL EQUATION [BY EDMUND C. SANFORD, PH. D., OF CLARK UNIVERSITY].

Dr. SANFORD has printed in the *American Journal of Psychology*, for November, 1888, and February and May, 1889, three valuable papers on the personal equation: No. I gives a brief historical account of the discovery and of the chief general studies on personal equation, going into considerable detail, and describing the various ways which have been proposed for determining its amount, and the devices for excluding it from observation. No. II treats of variations in its amount for different objects and under varying conditions, and No. III discusses the nature and the cause of personal equation from the standpoint of the psychophysicist. An appendix gives an extensive (though not exhaustive) and valuable bibliography of works dealing with the subject in both its astronomical and its physiological relations.

E. S. H.